

What is claimed is:

1. An electronic circuit prototyping system, comprising:

a) a personal computer having at least one expansion slot;

b) a multi-purpose data acquisition card installed in said

5 expansion slot;

c) software associated with said data acquisition card residing in memory of said personal computer and being in communication with said data acquisition card, said software including a custom communication driver; and

10 d) a prototyping board interface coupled to said data acquisition card, said prototyping board interface including

i) a communication module for communicating with said data acquisition card and said associated software via said custom communication driver,

15 ii) a function generator interface and variable DC voltage module coupled to said communication module,

iii) a function generator module coupled to said function generator interface and variable DC voltage module,

20 iv) an analog I/O module coupled to said communication module and to said function generator interface and variable DC voltage module,

v) a current amplifier and frequency calibration module coupled to said communication module, to said function generator module, and to said analog I/O module, and

25 vi) a first edge connector for receiving one of a prototyping board and a protection board, said first edge

connector being coupled to said communication module, to said function generator interface and variable DC voltage module, to said function generator module, to said analog I/O module, and to said current amplifier and frequency calibration module.

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2. The system according to claim 1, wherein:

said communications module supports 8-bit write, 7-bit addressing, 1-bit parity checking, and 8-bit read.

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3. The system according to claim 2, wherein:

said communications module has a data transfer rate of approximately 2400 bps.

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4. The system according to claim 3, wherein:

said function generator module utilizes inexpensive digital to analog converters and analog switching gates to control a low cost analog function generator chip.

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5. The system according to claim 4, wherein:

said digital to analog converters and analog switching gates are latched, so that said function generator can hold its state indefinitely.

6. The system according to claim 5, wherein:

said function generator can generate sine, triangle and square waveforms from approximately 0.1 Hz to 250 kHz.

7. The system according to claim 6, wherein:

5 waveform choice, coarse frequency, fine frequency, amplitude, and direct current (DC) voltage offset are all programmable.

8. The system according to claim 7, wherein:

10 said function generator has amplitude modulation (AM) and frequency modulation (FM) inputs coupled to said first edge connector and to said analog I/O module.

9. The system according to claim 8, wherein:

15 waveform output is fed back into said data acquisition card via analog gates.

10. The system according to claim 9, wherein:

20 said analog I/O module includes analog gates and simple linear circuits for routing analog inputs and analog outputs of said data acquisition card to emulate a full-featured digital multimeter.

11. The system according to claim 10, wherein:

12. The system according to claim 11, wherein:

said prototyping board interface further includes

vii) a manual control module and front panel coupled to

said communication module, to said function generator interface

5 and variable DC module, to said function generator module, to

said analog I/O module, and to said current amplifier and

frequency calibration module.

13. The system according to claim 12, wherein:

said function generator can be controlled from said

personal computer or from said manual control module and front
panel.

14. The system according to claim 13, wherein:

said prototyping board interface further includes

viii) an address and status module coupled to said

communication module, to said function generator interface and

variable DC module, to said analog I/O module, to said current

amplifier and frequency calibration module and to said first

20 edge connector.

15. The system according to claim 14, wherein:

said prototyping board interface further includes

ix) a protection board installed in said first edge connector, said protection board having a second edge connector for receiving a prototyping board.

5 16. The system according to claim 15, wherein:

said protection board includes at least one fuse, at least one resistor network, and at least one diode network.

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